



CRS Report for Congress

Mine-Resistant, Ambush-Protected (MRAP) Vehicles: Background and Issues for Congress

Andrew Feickert
Specialist in National Defense
Foreign Affairs, Defense, and Trade Division

Summary

The Department of Defense (DOD) recently launched a major procurement initiative to replace all uparmored High Mobility, Multi-Wheeled Vehicles (HMMWVs) in Iraq with Mine-Resistant, Ambush-Protected (MRAP) vehicles by FY2009. MRAPs have been described as providing twice as much protection against Improvised Explosive Devices (IEDs) — responsible for about 70% of U.S. casualties in Iraq — than uparmored HMMWVs.¹ The DOD's accelerated MRAP program raises a number of potential policy issues for congressional consideration. This report will be updated.

Background

MRAPs are a family of vehicles produced by a variety of domestic and international companies that generally incorporate a “V”-shaped hull and armor plating designed to provide protection against mines and IEDs. The DOD intends to procure three types of MRAPs. These include Category I vehicles, weighing about 7 tons and capable of carrying 6 passengers; Category II vehicles, weighing about 19 tons and capable of carrying 10 passengers; and Category III vehicles, intended to be used primarily to clear mines and IEDs, weighing about 22.5 tons and capable of carrying up to 12 passengers. The Army and Marines have employed two versions of MRAPs (the Category III Buffalo and the Category II Cougar, respectively) in limited numbers in Iraq and Afghanistan since 2003, primarily for route clearance and explosive ordnance disposal (EOD) operations. These route clearance MRAPs quickly gained a reputation for providing superior protection for their crews, and some suggested that MRAPs might be a better alternative for transporting troops in combat than uparmored HMMWVs.

The Evolving Requirement. The Buffalo MRAP was originally intended to be fielded only to engineer units, with the Army planning to stand up three Route Clearance

¹ Tom Vanden Brook, “Troops in Iraq Get Safer Vehicle,” *USA Today*, May 10, 2007.

Report Documentation Page			<i>Form Approved OMB No. 0704-0188</i>	
<p>Public reporting burden for the collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington VA 22202-4302. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to a penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number.</p>				
1. REPORT DATE 21 AUG 2007	2. REPORT TYPE N/A	3. DATES COVERED -		
4. TITLE AND SUBTITLE Mine-Resistant, Ambush-Protected (MRAP) Vehicles: Background and Issues for Congress			5a. CONTRACT NUMBER	
			5b. GRANT NUMBER	
			5c. PROGRAM ELEMENT NUMBER	
6. AUTHOR(S)			5d. PROJECT NUMBER	
			5e. TASK NUMBER	
			5f. WORK UNIT NUMBER	
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) Congressional Research Service The Library of Congress 101 Independence Ave., SE Washington, DC 20540-7500			8. PERFORMING ORGANIZATION REPORT NUMBER	
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)			10. SPONSOR/MONITOR'S ACRONYM(S)	
			11. SPONSOR/MONITOR'S REPORT NUMBER(S)	
12. DISTRIBUTION/AVAILABILITY STATEMENT Approved for public release, distribution unlimited				
13. SUPPLEMENTARY NOTES The original document contains color images.				
14. ABSTRACT				
15. SUBJECT TERMS				
16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT SAR	18. NUMBER OF PAGES 6
a. REPORT unclassified	b. ABSTRACT unclassified	c. THIS PAGE unclassified		

Companies per year starting in FY2007, for a total of 12 companies.² Marine Corps leadership reportedly decided in February 2007 to replace all uparmored HMMWVs in Iraq with MRAPs, whereas Army leadership would continue to rely on its uparmored HMMWVs.³ In March 2007, the MRAP requirement for all services reportedly grew by 15% as the Navy, Air Force, and the Special Operations Command (SOCOM) added requirements for MRAPs that stood at 7,774 DOD-wide as of March 26, 2007.⁴ In May 2007, reportedly because of the requests from Army commanders in Iraq, Army leadership reportedly began considering the possibility of replacing all uparmored HMMWVs in Iraq with MRAPs, thereby increasing the Army's total requirement to approximately 17,700 MRAP vehicles.⁵ On June 28, 2007, the Joint Requirements Oversight Council (JROC)⁶ reportedly endorsed a requirement to replace every HMMWV in with a MRAP, which could potentially push the MRAP requirement to more than 23,000 vehicles if force levels in Iraq remain relatively constant for the next few years.⁷ Given the current situation in Iraq and uncertainty about troop levels, the DOD's and the Service's MRAP requirements may fluctuate throughout the duration of the program.

DOD Accelerates the MRAP Program. Secretary of Defense Robert Gates has declared that "the MRAP program should be considered the highest priority Department of Defense acquisition program."⁸ The Secretary of Defense has established the MRAP Task Force to speed production and fielding of MRAPs and has assigned the Marines to manage all MRAP procurement for DOD. The MRAP program has also been designated a "DX" program, giving it priority for resources.⁹

² Statement by Major General Stephen M. Speakes, Major General Jeffrey A. Sorenson, and Brigadier General Stephen D. Mundt, Readiness Subcommittee and Tactical Air and Land Forces Subcommittee, House Armed Services Committee, Army Force Protection and Aviation Safety Programs, February 1, 2006, p. 6.

³ David Wood, "Marines to Replace Humvees in Iraq," *Baltimore Sun*, February 15, 2007.

⁴ Jason Sherman, "MRAP Requirement Rises 15 Percent as Navy, Air Force, SOCOM Weigh In," *InsideDefense.com*, March 26, 2007.

⁵ Jason Sherman, "Army Eying the Replacement of all Humvees in Iraq with MRAP Vehicles," *Inside the Pentagon*, May 3, 2007, and Letter from Acting Secretary of the Army Pete Geren to the Secretary of Defense, MRAP Acquisition, May 13, 2007.

⁶ Chartered in 1984 (10 U.S.C. Sec 181), the JROC is tasked with examining potential joint military requirements; identifying, evaluating, and selecting candidates for joint developmental and acquisition programs; providing oversight of cross-service requirements and management issues; and resolving service concerns that arise after the initiation of a joint program.

⁷ Jason Sherman, "Do the Marines Really Want 246,000 MRAPs? Not Exactly," *Inside Defense.com*, August 2, 2006.

⁸ Memorandum from Secretary of Defense Robert Gates, "MRAP Acquisition," May 2, 2007.

⁹ Jason Sherman, "Gates Establishes MRAP Task Force to Speed Up Production, Fielding, *InsideDefense.com*, June 4, 2007, and Emelie Rutherford, "Gates Approves DX Rating for MRAP," *InsideDefense.com*, June 4, 2007.

Current MRAP Contracts

MRAP II Contract¹⁰. On July 31, 2007, the Marines issued a request for proposal for the MRAP II Enhanced Vehicle Competition. The MRAP II is intended to better address the threat of Explosively-Formed Penetrators (EFPs), a type of stand-off improvised explosive device that employs a shaped charge against the sides of vehicles.¹¹ The MRAP II solicitation requires that potential vendors provide vehicles for testing by the end of September 2007 and be able to accommodate production orders in January 2008.¹² The Pentagon reportedly has identified 20 MRAP II “potential prime vendors,” including three companies eliminated from the first round of MRAP competition and three non-U.S. firms in Canada, Germany, and South Africa, respectively.¹³

MRAPs Ordered Against 7,774 Vehicle Requirement, as of August 10, 2007

Company	Category I	Category II	Category III	Total
FPII ^a	1257	648	58	1963
GDLS-C	610	10	0	620
IMG	1955	16	0	1971
Armor Holdings	1154	16	0	1170
BAE	201 ^b	330	0	531
Oshkosh	100	0	0	100
PVI	60	0	0	60
Total, by Type	5337	1020	58	6415

Source: Information in this table was provided to CRS by the Marine Corps Systems Command, Quantico, VA.

a. Abbreviations: FPII: Force Protection Industries, Inc., Ladson, SC; GDLS-C: General Dynamics Land Systems, Ontario, Canada; IMG: International Military and Government, LLC (a division of Navistar), Warrenville, IL; Armor Holdings: Stewart and Stevenson Tactical Vehicle Systems, LP (a division of Armor Holdings, Inc.), Sealy, TX; BAE: BAE Systems Land and Armament, Santa Clara, CA; Oshkosh: Oshkosh Truck Division, Oshkosh, WI; PVI: Protected Vehicles, Inc., North Charleston, SC.

b. This number includes 170 Category I SOCOM variant MRAPs.

¹⁰ Unless otherwise noted, information in this section is taken from Emelie Rutherford and Jason Sherman, “Solicitation Expected to be Released this Week for MRAP II Competition,” *InsideDefense.com*, July 30, 2007, and Jason Sherman, “Pentagon Eyes More than a Dozen New Potential Vendors for MRAP II,” *InsideDefense.com*, August 1, 2007.

¹¹ Tom Vanden Brook, “MRAPs May Need Extra Armor Face EFPs,” *USA Today*, May 31, 2007, and “Letter” Add-On Armor Too Heavy for MRAPs,” *USA Today*, July 17, 2007.

¹² Jason Sherman, “Pentagon Preparing New MRAP Competition for EFP-Stopping Designs,” *InsideDefense.com*, July 2, 2007.

¹³ Jason Sherman, “Pentagon Eyes More Than a Dozen New Potential Vendors for MRAP II,” *InsideDefense.com*, August 1, 2007.

MRAP Concerns. Although MRAP vehicles appear to offer significantly more protection than the current fleet of uparmored HMMWVs, some observers caution that advances in IED design and the use of more sophisticated anti-tank missiles and rocket-propelled grenades (RPGs) could render MRAPs just as vulnerable as uparmored HMMWVs. Reports suggest that MRAP production rates by year end will be 60% lower than what defense officials initially expected, although the DOD claims that they are on track to build about 1,300 MRAPs a month by December 2007.¹⁴ Another concern is that there might not be adequate supplies of steel for armor, tires, and other components needed for the MRAPs.¹⁵ The priority placed on MRAP production might also have an impact on other programs, such as the Medium Tactical Vehicle Replacement (MTVR) program, because of a competition for production resources.¹⁶ Some observers are also concerned about overall vehicle quality and interoperability, as MRAPs are being built by many different companies, and some in Congress have suggested that the DOD adopt a single MRAP design from the best features of all MRAPs currently being developed.¹⁷

Even if production concerns are overcome, some believe that the deployment of MRAPs in any meaningful quantities will be “too little, too late,” as U.S. forces in Iraq may be significantly reduced over the next year if progress is not made to bring stability to the country. Perhaps partly in response to this criticism, the DOD has asked Congress for \$748 million to airlift MRAPs to Iraq.¹⁸ The Military Transportation Command reportedly estimates that it costs \$135,000 to transport an MRAP by plane, as opposed to \$18,000 by ship.¹⁹ A C-17 can carry as many as three MRAPs and deliver them to Iraq in 13 hours after they have been outfitted with radios and IED jammers.²⁰ Although some maintain that it is important to get these vehicles to Iraq as quickly as possible to protect troops, others suggest that the need to airlift these vehicles is a result of poor planning and a failure to adopt MRAPs for troop use years earlier. Some military officials are concerned that MRAPs are too large and unwieldy to operate in restrictive environments, and the Marines contend that MRAPs are not expeditionary because of logistical requirements and are not shipboard compatible.²¹ It is also possible that MRAPs could have similar air transportability issues, which could have an impact on rapid unit deployment during contingency operations.

¹⁴ Jason Sherman, “MRAP Monthly Production Rates 60 Percent Lower Than Originally Expected, *InsideDefense.com*, July 10, 2007, and DOD Transcript, DOD News Briefing with John Young, MRAP Task Force Chairman, July 18, 2007.

¹⁵ Jason Sherman, “Army Eyes \$10 Billion in Procurement Cuts to Fund Larger MRAP Fleet.”

¹⁶ Emelie Rutherford, “DOD Reviews How MRAP Priority Rating Might Affect Other Programs,” *InsideDefense.com*, June 11, 2007.

¹⁷ Jen DiMascio, “Lawmakers Urge Gates to Increase MRAP Oversight,” *Defense Daily*, August 6, 2007.

¹⁸ Tom Vanden Brook, “\$ 750M Armor Airlift Sought,” *USA Today*, August 8, 2007, and OSD FY2008 Global War on Terror Budget Amendment Request for MRAP Vehicles, July 31, 2007.

¹⁹ Ibid.

²⁰ Ibid.

²¹ Tom Vanden Brook, “Army Seeks \$ 20 Billion for MRAPS, But Quick Fielding Has Hurdles,” *USA Today*, May 18, 2007, and Geoff Fein, “MRAP Testing Near Completion, Contracts Expected in June,” *Defense Daily*, April 25, 2007.

Recent Congressional Action. The House Armed Services Committee, “concerned that the FY 2008 budget request ... did not adequately resource the remaining MRAP funding requirement,” recommended \$4.6 billion, an increase of \$ 4.1 billion, to complete the DOD’s MRAP requirement, using Service and DOD procurement funds from what it considered lower-priority programs.²² The Senate Armed Services Committee added \$ 4 billion over DOD’s requests for MRAPs — with almost \$2 billion for Navy and Marine Corps requirements, more than \$1.5 billion for Army requirements, \$430 million for Air Force MRAPs, and \$124 million for SOCOM vehicles.²³ The House Appropriations Defense Subcommittee did not include any MRAP funding in its version of the FY2008 Defense Appropriations Bill (H.R. 3222), but the subcommittee reportedly will address MRAP funding in the fall of 2007, when it is scheduled to consider the Administration’s supplemental funding request.²⁴

Administration Request for Increase in MRAP Funding for FY2008²⁵. On July 31, 2007, the Administration asked Congress for an increase of \$5.3 billion for MRAPs in the FY2008 Supplemental Spending Bill. This increase would procure an additional 1,520 MRAPs, provide \$30 million for research efforts to protect MRAPs from emerging threats, \$56 million for add-on armor to protect against EFPs, and \$748 million to airlift newly produced MRAPs to Iraq.

Potential Issues for Congress

Timeliness of DOD’s Decision to Replace HMMWVs with MRAPs. Some analysts have questioned why it has taken almost four years for the DOD and the Services to decide to replace uparmored HMMWVs with MRAPs. Some have suggested that defense officials view Iraq as a military anomaly and “saw no point in wasting scarce resources on buying vast armored fleets [MRAPs] that would never again be deployed.”²⁶ The situation also highlights the challenges of adapting the equipment procurement system to a rapidly changing operational environment.

MRAP Quality, Sustainability, and Operational Issues. The DOD’s acceleration of the MRAP program, the significant commitment of budgetary resources, and the goal of rapidly getting as many MRAPs into the hands of troops as possible, could result in quality, sustainability, and operational issues. DOD pressure for industry to meet high production goals and competition between vendors could result in MRAP quality control issues. Because of the decision to rapidly acquire MRAPs from a number of vendors, sustainability issues such as availability of repair parts and qualified maintenance

²² House Armed Services Committee Report on the National Defense Authorization Act for Fiscal Year 2008 (H.R. 1585), Report 110-146, May 11, 2007, pp. 466-467.

²³ Senate Armed Services Committee Press Release, Senate Statement on the FY2008 Defense Authorization Bill, May 25, 2007, p. 2.

²⁴ Emelie Rutherford and Jason Sherman, “Solicitation Expected to be Released this Week for MRAP II Competition,” *InsideDefense.com*, July 30, 2007.

²⁵ Information in this section is taken from OSD FY2008 Global War on Terror Budget Amendment Request for MRAP Vehicles, July 31, 2007.

²⁶ Evan Thomas and John Barry, “Can American Military Stop Deadly IEDs,” *Newsweek*, August 20, 2007.

personnel might have an adverse impact on MRAP readiness rates. The decision to rapidly field MRAPs might also have resulted in a less than rigorous examination of operational issues, such as how effectively MRAPs perform in restrictive terrain and how substituting MRAPs for HMMWVs affects a unit's air and maritime deployment. Others question if doctrine on MRAP usage — transport vehicle versus an armored fighting vehicle — has been adequately developed.

What Are DOD's Long-Term Plans for MRAP? Senior Army officials have stressed that MRAPs are only “an interim strategy” and that the Army was still “dedicated to the future of the Joint Light Tactical Vehicle — the HMMWV replacement.”²⁷ Some question DOD's long-term plans for 23,000 plus MRAPs in the event of a significant troop reduction in Iraq. Will MRAP production quotas be decreased in the event of large-scale troop reductions? Will MRAPs be permanently integrated into force structures, or will they be placed in a reduced readiness status after Iraq? It is also possible that significant numbers of MRAPs could be transferred to Iraqi security forces. Army officials have reportedly stated that they see a need for MRAPs beyond Iraq and Afghanistan, given the successful use of IEDs by insurgents against U.S. forces.²⁸

How Will MRAP Acquisition Affect Other DOD Programs? Given MRAP's anticipated level of funding, the MRAP program is now the DOD's third-largest FY2007 acquisition program, behind missile defense and the Joint Strike Fighter.²⁹ Some maintain that the DOD's plans to acquire large numbers of MRAPs will essentially “kill the Joint Light Tactical Vehicle (JLTV) and HMMWV lines.”³⁰ As previously noted, MRAP production might also have an impact on the Medium Tactical Vehicle Replacement (MTVR) program because of a competition for resources. There is also a possibility that modernization programs such as the Army's Future Combat System (FCS) program might also be affected by the MRAP program, particularly if the MRAP program experiences significant cost growth.

²⁷ Fawzia Sheikh, “Industry Unclear About Army's Pans for Joint-Service MRAP Program,” *InsideDefense.com*, February 12, 2007.

²⁸ Marina Malenic and Marjorie Censer, “Geren: Army Sees Need for MRAPs Beyond Iraq, Afghanistan Wars,” *InsideDefense.com*, June 25, 2007.

²⁹ DOD Transcript, DOD News Briefing with John Young, MRAP Task Force Chairman, July 18, 2007.

³⁰ Gina Cavallaro, “MRAP Request May be the End of the Road for Humvee,” *Army Times*, May 10, 2007.